

## CLAIMS

1. An epitaxial growth method to form a semiconductor thin film including a heterojunction of a group III-V compound semiconductor by means of molecular beam epitaxy, the method comprising:

a first step of irradiating a molecular beam of at least one of group III elements and a molecular beam of a first group V element to form a first compound semiconductor layer;

a second step of stopping the irradiation of the molecular beam of the group III element and the molecular beam of the first group V element to halt growth until an amount of the first group V element supplied is reduced to 1/10 or less of that in the first step; and

a third step of irradiating a molecular beam of at least one of the group III elements and a molecular beam of a second group V element to form a second compound semiconductor layer on the first compound semiconductor layer, the second compound semiconductor layer being different from the first compound semiconductor.

2. An epitaxial growth method to form a semiconductor thin film including a heterojunction of a group III-V compound semiconductor by means of molecular beam epitaxy, the method comprising:

a first step of irradiating a molecular beam of at least one of group III elements and a molecular beam of a first group V element to form a first compound semiconductor layer;

a second step of stopping the irradiation of the molecular beam of the group III element and the molecular beam of the first group V element and irradiating a molecular beam of a second group V element to halt growth until an amount of the first group V element supplied is reduced to 1/10 or less of that in the first step; and

a third step of further irradiating a molecular beam of at least one of the group III elements to form a second compound semiconductor layer on the first compound semiconductor layer, the second compound semiconductor layer being different from the first compound semiconductor.

3. The epitaxial growth method as claimed in any one of claims 1 and 2,

wherein the first compound semiconductor layer is any one of an InAlAs layer and an InGaAs layer and the second compound semiconductor layer is any one of an InP layer and an InGaP layer.

4. The epitaxial growth method as claimed in any one of claims 1 and 2,

wherein the first compound semiconductor layer is any

one of an InP layer and an InGaP layer and the second compound semiconductor layer is any one of an InAlAs layer and an InGaAs layer.